What is claimed is:

1. A semiconductor device comprising:

a functional element having a first conductivity type semiconductor region provided in a semiconductor substrate, and a second conductivity type semiconductor region provided in contact with the first conductivity type semiconductor region and having a conductivity type different from that of the first conductivity type semiconductor region,

wherein a diode is provided in a boundary portion of a contact region to which an electrode is connected in the first conductivity type semiconductor region.

2. A semiconductor device as set forth in claim 1, wherein the diode is a PN diode constituted by the first conductivity type semiconductor region and a second conductivity type region embedded in the first conductivity type semiconductor region in contact with a boundary of the contact region and having a conductivity type different from that of the first conductivity type semiconductor region.

3. A semiconductor device as set forth in claim 2, wherein a universal contact structure is provided in the contact region with the second conductivity type region in contact with the boundary portion of the contact region.

4. A semiconductor device as set forth in claim 1,

wherein a high-concentration impurity region having the same conductivity type as the first conductivity type semiconductor region and a higher impurity concentration than the first conductivity type semiconductor region is provided in contact with the electrode in the contact region,

wherein the diode is a Schottky diode having a Schottky junction formed by the electrode connected to the contact region and the first conductivity type semiconductor region.

5. A semiconductor device as set forth in any of claims 1 to 4, wherein the diode is provided adjacent a surface of the first conductivity type semiconductor region.

6. A semiconductor device as set forth in any of claims 1 to 5, wherein the contact region has a generally C-shape or a ring shape which surrounds the second conductivity type semiconductor region on the surface of the first conductivity type semiconductor region.

7. A semiconductor device as set forth in any of claims 1 to 6, wherein the diode is provided at least in a part of the boundary portion of the contact region facing the second conductivity type semiconductor region.

8. A semiconductor device as set forth in any of claims 1 to 6, wherein the diode is provided in the entire boundary portion of the contact region.

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9. A semiconductor device as set forth in any of claims 1 to 7, wherein a bonding region is defined on the first conductivity type semiconductor region for bonding a wire to the electrode, and the diode is provided at least in a part of the boundary portion of the contact region adjacent to the bonding region.

10. A semiconductor device as set forth in any of claims 1 to 9, wherein the functional element is a bipolar transistor which comprises a base region defined by the first conductivity type semiconductor region, and an emitter region defined by the second conductivity type semiconductor region.